Software and Computing News and Announcements

Tom Junk

DUNE Software and Computing Bi-Weekly Meeting

September 21, 2015

Group Structure

General S&C: Tom Junk (coordinator) and Amir Farbin (deputy)

- Offline Group – perhaps rename to Software and Computing? Convener – Tom Junk + TBD
  - Software infrastructure (but see below! Currently handled by the groups)
  - Distributed Computing – mostly handled by Fermilab SCD though we should provide input and coordinate.
  - Data Handling – Qizhong Li
  - Databases – Jonathan Paley
  - DAQ interface

- Include these topics in the bi-weekly "Detector Weeks" general meeting Mondays at 10:00 AM – 12:00 Noon Central Time on ReadyTalk. This meeting is an exception. The regular time conflicts with the DAQ meetings

Mailing Lists

No need so far to make new ones:

dune-computing
dune-computing-news

and the physics tools groups have their own:

dune-fd-35ton
dune-reco
lbnf-bm-sim
dune-fd-photon
dune-cern-proto

https://web.fnal.gov/project/LBNF/SitePages/LBNF%20and%20DUNE%20Mailing%20Lists.aspx

Group Structure

- Beam Simulations and Systematics
  Conveners: Laura Fields and Paola Sala
  Weekly meetings Thursdays at 10:30 CT
  (alternates Beam Interface and Beam Task Force)

- Far Detector Simulation and Reconstruction
  Conveners: Tingjun Yang and Xin Qian

  "Physics Weeks" Bi-weekly meetings
  Mondays 10 AM-12:00 Noon Central Time

- Near Detector Simulation and Reconstruction
  Convener: Tyler Alion
  Meetings: TBD – just getting this group started
  Effort already underway on FGT G4 simulation – it needed coordination as duplication was starting to happen

New Redmine site set up for the Fine-Grained Tracker
https://cdcvs.fnal.gov/redmine/projects/dunefgt

Group Structure

- 35-ton Simulations, Reconstruction, and Analysis
  Conveners: Michelle Stancari, Tingjun Yang, Mark Convery

  Meetings: Wednesday Weekly 10-12 CT, shared with 35-ton hardware meetings (10:00, software starts at 11:00)

- protoDUNE Sim/Reco/Ana
  Conveners: Donna Naples, Jarek Nowak, Maxim Potekhin, Cheng-Ju Lin

  Meetings on Fridays in Detector Weeks

- Photon Detector Sim/Reco – Alex Himmel and Denver Whittington. Meets with the FD, 35-ton, and protoDUNE groups

Working Group Web Pages

Anne Heavey has made page templates for each of the Software and Computing working groups on the DUNE at Work web page.

https://web.fnal.gov/collaboration/DUNE/SitePages/Home.aspx

Look under the “Working Groups” menu and “Software and Computing”. Some groups, like 35-ton and FGT are shared with their detector pages.

Anne said she gave permissions for the conveners to edit these pages but I couldn’t edit the offline group page yet. I’ll notify conveners about them when I have verified permissions with Anne. These pages may just link to existing pages e.g. in Redmine.

Upcoming LArSoft Requirements Workshop

- Late October or Early November
- DUNE LArSoft stakeholders are welcome to attend
- Doodle Poll for the workshop

http://doodle.com/poll/4dktdznyftf8q576

- Looks like the best dates are Oct 17 and 18 – couldn't make everyone happy.
- Redmine site for materials for the workshop

https://cdcvs.fnal.gov/redmine/projects/lartpc-requirements

Requirements Workshop

- Some of DUNE's requirements will be quite unique!
  - Data needs to be available for a long time (decades)
  - Detector geometries are DUNE-specific
    - Very Large Detector
    - Segmentation into multiple TPC's
    - Wrapped wires
    - Different photon detection technologies
  - Dual-phase WA105 is a new task for LArSoft
  - High-pressure Gaseous Argon TPC ND option
- But many of our requirements are similar as for other experiments
  - Detailed simulation of interactions in liquid argon
  - Neutrino interaction modeling (GENIE, GiBUU, Neut, ...)
  - Full automatic Reconstruction

Status of DUNE Resource Conversion: DUNE VO

- DUNE VO created and nearly finished configuration
  - Managers assigned – Steve Timm, Tom Junk
  - Users' information copied LBNE VO:

    But not all certificate information was copied. Most user entries are lacking one or more certificates. Service Desk Ticket in progress
  - FermiGrid Batch allocation quota to be shared between LBNE and

    DUNE during the switchover period. Solution developed by Joe Boyd and Steve Timm
  - Production roles assigned to LBNE production people – if you need the production role, just ask Tom or Steve. Production host certificates requested and installed for DUNE
  - Bo Jayatilaka is negotiating with remote sites to get DUNE jobs

    accepted on the OSG everywhere LBNE ones were.

Status of DUNE Resource Conversion: DUNE VO

- Users can still submit LBNE jobs for now but eventually the LBNE VO will be retired.
- Users have been able to run DUNE jobs on Fermigrid and even production jobs, but if you have troubles, your certs may not have been updated. Ask Tom or Steve in the short term while we wait for the ticket work to be finished.
- Batch submission instructions:

https://cdcvs.fnal.gov/redmine/projects/lbne-software-and-computing/wiki/Submitting_Jobs_at_Fermilab

To be updated when DUNE is all working. Linked on https://web.fnal.gov/collaboration/DUNE/SitePages/Home.aspx

New GUMS Mapping

- Old map – jobs submitted under the analysis role would run as lbneana. DUNE analysis jobs (non-production jobs are submitted as analysis jobs) run as duneana

- GUMS (Grid User Management Service) server change Sep. 29
  Jobs will run as the user and not as duneana.

- Files transferred without gridftp will now be owned by the user and not by the shared ana account (yay!)

- SCD warns us to check that BlueArc (/lbne/data, /lbne/data2) directories are appropriately group writeable. We've had the group write issue for a long time now and users have been setting chmod g+rw on their directories already. But should be less of a problem (unless someone is depending on directories owned by duneana or lbneana). We do have permissions to fix these if need be.

Code Management

- *art*-based code is hosted at Fermilab on Redmine sites
  - larsoft-based code and repositories:
    - dunetpc
    - duneutil
    - dune_pardata
    - lbne_raw_data (kept to not dune-ify the 35t DAQ)

- Other major DUNE shared codebases:
  - G4LBNE – built from source stored in Redmine git repo, and placed on /lbne/app/users areas before running
  - FastMC – similar. But interested in storing code on GitHub

    For discussion – what should DUNE's policy be?

Code Management

- Code repositories – *art*-based code: Fermilab repository
  Our data management plan says that Fermilab will store, version, and test the software needed for simulating and reconstructing DUNE data.

- Some code is developed privately, and some code is used to estimate sensitivities and design the experiment, so is not necessarily covered in the DMP

- Nonetheless, I would like to encourage Fermilab to host a mirrored copy of any official DUNE code that is being developed elsewhere, such as GitHub, for safety and convenience.

Code Management: CVMFS

- CVMFS is needed to run efficiently on OSG. One could submit tarballs or ifdh over the code to a worker node I suppose, but CVMFS is a better distributed solution for this sort of thing.
- LArSoft is already distributed on CVMFS

Mounted as /cvmfs/fermilab.opensciencegrid.org
on the gpvm's, and presumably the batch machines too.
Look in products/larsoft.

We have a CVMFS area: /cvmfs/dune.opensciencegrid.org

Power grid users: Beam sims, Mars, FastMC (LBPWG).
35-ton will soon need substantial CPU.
Each group releases on its own timescale. Better to have a CVMFS manager per group than one super-CVMFS manager

DUNE CVMFS Managers

- dunetpc and larsoft-related DUNE software:
  Dave Adams and Alex Himmel

- Beam Simulations
  Laura Fields -- ticket submitted to make her a DUNE CVMFS manager

- Long-Baseline Physics Working Group
  Elizabeth Worcester – ticket submitted to make her a DUNE CVMFS manager

Missing – ND WG CVMFS manager – but just getting that one started.

New-User Onboarding

- Has been in flux – users should now sign up for a DUNE account now get these:
  - Fermialb Visitor ID
  - Kerberos Principal
  - Services Account
  - FNALU Account (afs home area)
  - DUNE Interactive account -- almost automated but not quite yet
  - DUNE VO membership – this one's automated

KCA and CILogon

- KCA certs are used for grid authentication and submitting jobs
- Fermilab is considering migrating away from KCA certs

https://cd-docdb.fnal.gov:440/cgi-bin/ShowDocument?docid=5605

Secure Endpoints is looking to replace the HSM (hardware security module), the kx509 protocol, and the crypto library. They suggest looking for an alternative to KCA. Not many customers for this aging technology.

Alternatives:
– Federated Identity/Single Sign On
– CiLogon Certificate Authority
– Stand up another internal Certificate Authority?